

ANNUAL REPORT OF P.G DEPT. OF BIOTECHNOLOGY- 2018-20

Activities

1. Department of Biotechnology organized a **one day National Seminar on "Biotechnological interventions in stress management" on 12th January, 2019**. Dr. Himanshu Pathak, Director, National Rice Research Institute, Cuttack was the Chief Guest. The seminar focussed on several biotechnological approaches and their application towards management of biotic and abiotic stresses as required for sustainable growth of plant, animals and microbes. The seminar was attended by eminent speakers from across the country including, Dr.Bimal Prassana Mohanty, ICAR-CIFRI, Barrackpore, Dr.Mrinal Samanta, ICAR-CIFA, Bhubaneswar, Dr. Arup Mukherjee, ICAR-NRRI, Dr. Padmaja P Mishra, SINP, Kolkata, Dr. S. Senapati, ILS, Bhubaneswar and Dr.Sukanta Bhattacharya, Lignin Bioscience Pvt. Ltd who deliberated on different aspect of the theme of the seminar. Posters relevant to the theme of the seminar were presented by student participants.
2. Dr.Jabed Akhtar, Senior Scientist, IMGENEX India was invited as resource person on 27.10.2018 under the **Industry academia interaction series** of the department. Dr Akhtar delivered a talk on the development of biotechnology based kits for efficient detection and prediction of plant infection. He also emphasized the need for entrepreneurship development among young biotechnology graduates for self-employability and growth of this ever advancing field of science
3. P.G. Dept. of Biotechnology initiated the **Biotechnology Seminar Series** in the year 2019. Under this, four eminent biotechnologists were invited to deliver lectures on recent issues in Biotechnology. **Dr.Nrusingha Dey, Scientist V at the ILS, Bhubaneswar** spoke about "Transcriptional regulation of gene expression" on 15.03.2019. Dr. Rupesh Dash, Scientist IV at ILS, Bhubaneswar discussed about "Gene therapy for human disease treatment" on 26.03.2019. **Dr.Santosh Kar, Retd Professor, JNU** addressed about "Immunomodulation by Curcumin in Malaria" on 27/03/2019.**Dr. Gourav Raj Dwivedi, RMRC, Bhubaneswar** who spoke about "Synergy: Need of the hour" on 10.04.2019. The first year of the series ended with **Dr. Ajit K. Sashany, Chief Scientist CIMAP, Lucknow**, who discussed about "The Diversity- Plant Secondary Metabolite Pathways" on 20/08/2019. **Dr. Narendra Padhan, Research Scientist and Entrepreneur at Upsala University, Sweden** delivered a talk about "Biotechnology, Innovation and Mind set" on 09/01/2020.

4. A study tour was organized on 14.12.2018 to the M/s DIAGEO INDIA Distilleries, Gopalpur, Berhampur for the PG 2nd year (2017 admission batch) and UG 3rd year (2016 admission batch) students. Students were explained about the various biotechnological approaches used in modern distilleries and their applications in brewery industries.
5. The students of the 2nd Semester PG Biotechnology (2018 Admission batch) visited the Central Instrumentation facility at OUAT, Bhubaneswar on 14th March 2019. Students were explained about Scanning Electron Microscope (SEM), cryostat, different types of centrifuges (Ultracentrifuge, High speed centrifuges, Refrigerated centrifuges), Gas Chromatography–Mass spectrometry (GC-MS), ICP-OES (Inductively coupled plasma - optical emission spectrometry), Liquid Chromatography with tandem mass spectrometry (LC-MS-MS), Supercritical Fluid Extraction (SFE) Systems, HPTLC (High-performance thin-layer chromatography), FTIR-ATR (Fourier transform infrared spectroscopy- Attenuated total reflection), etc.

Students' achievements

1. Three students of 2nd year PG Biotechnology were selected to undergo training under the Biotech Skill Development Series (BSDS)-2018 organized by MRD Life Sciences, Lucknow from 11th -17th October 2018.
2. 11 students of the 3rd year UG Biotechnology represented the department at the 8th Programme on Young Graduate for Leadership in Biotechnology at SOA University, Bhubaneswar. Ms Preeti Das was awarded the first prize in the biotechnology quiz competition organized as the part of the event.
3. Ms Soubhagya Soumyashree Samal PG Biotechnology (2016-2018) and M.Phil (2018-2019) was appointed as Research Associate in Lupin Pvt. Limited, Biotechnology Division. Pune.
4. Ms Arpita Panda, 1stYr PG student (2018 admission batch) was selected with Fellowship amount of Rs. 10000.00 for ‘‘IISER-K Summer Student Research Programme 2019’’ at the Indian Institute Science Education and Research-Kolkata.
5. Ms. Pyari Payal Beura, 1stYr PG student (2018 admission batch) was selected to undergone 1 month Summer Internship on Proteomics, Immunotechniques and Molecular biology at IMGENEX India Pvt. Limited, Bhubaneswar
6. The PG students were selected in National Institutes like IMMT, Bhubaneswar and RMRC, Bhubaneswar for their 6- months dissertation program.

7. **Tista Mallick of 1st year MSc. (Biotechnology)** was awarded **2nd Runners-up** in the **Voice of BT Intercollegiate Public Speaking Contest (East Zone)** conducted by Novozyme India Pvt. Ltd. on 27 September, 2019. She will be receiving Rs. 10000/- as prize money and will be doing a 6 month's internship at Research and Development (R&D) facilities of Novozyme India Pvt. Ltd.
8. 12 students of UG 2nd year have interned for Ambika Prasad Research Foundation (APRF) from 1st to 31st August, 2019 and have completed the course and now writing two research papers about their works. The internship research was on Phytochemical Analysis.
9. 3 students from UG 3rd year **presented papers** in the 4th International Conference on Management, Sciences, Engineering and Applications held at Centurian University of Technology and Management, Bhubaneswar on 19-21 December, 2019.
10. Shrabani Patnaik of UG 2nd year participated in KIIT Fest-2019 and won 1st prize (**Cash Prize of 20,000/-**) in Martian-2 event, a model competition held on 16-18 December, 2019.
11. 2 students of UG 2nd year Secured **Special Mention (3rd position)** in the SOA MUN session delegating as Russian Federation and won cash prize of **Two Thousand Rupees**.
12. Ritu Tripathi and Itishree Behera UG (2016-19) passed out students joined for Master programme in Biotechnology at University of Allahabad and BHU respectively

Teachers Achievements

- Prof. Sasmita Mohanty was appointed as Dean, Faculty of Science & Technology, Rama Devi Women's University.
- Prof. Sasmita Mohanty, Prof.& Head was invited as a resource person for the refresher course in Bio Sciences organized by the Dept. of Zoology, Utkal University, Bhubaneswar on 01.09.2018.
- Prof. Sasmita Mohanty, Prof& Head was invited as the executive board member to the 34th Executive committee meeting of the Association for promotion of DNA finger printing and other DNA technologies (ADNAT) on 05.03.2019 at IIT, Rourkee.
- Dr. Raj Kumar Joshi, Associate Professor was invited as a Jury Member in the Young Scientist Forum of the 4th India International Science Festival, Lucknow on 5th-8th October 2018.

- Dr. Raj Kumar Joshi, Associate Professor was invited as a keynote speaker at the 2018 Next Gen Genomics, Biology, Bioinformatics and Technologies (NGBT) conference held at Jaipur from Sep 30th to 2nd Oct 2018.
- Dr. Raj Kumar Joshi, Associate Professor was invited as a keynote speaker at the 5th edition of International Conference on Plant Genomics held at Berlin, Germany from June 13th to June 15th 2019.
- Dr. Raj Kumar Joshi, Associate Professor was invited as a speaker at the National Conference on Recent Advances in Biological Sciences (NCRABS2019) held at Sambalpur University, Sambalpur during 3rd and 4th April 2019.
- Dr. Raj Kumar Joshi, Associate Professor was accepted as a Life Member of the Indian Society of Genetics and Plant Breeding on 26th December 2018.
- Dr. Dillip Kumar Bishi, Asst. Professor was invited as a speaker at the National Conference on “Biodiversity, Biotechnology and Bioinformatics: Innovative and Emerging Trends (NCBBBIET-2019), organized by P.G. Department of Botany, Berhampur University (BU), Berhampur (Odisha) from 22nd-23rd February, 2019.
- Dr. Monalisa Mohanty, Asst. Professor was invited as a speaker at the National conference on “Plants for sustainable development and clean environment” and 43rd Annual conference of Odisha Botanical Society on 23rd and 24th December 2018.
- Dr. Monalisa Mohanty, Asst. Professor presented a paper at the International Conference on “Biodiversity and Sustainable Development: Strategies for future” on 29th and 30th Jan 2019, at N.C. Autonomous College Jajpur, Odisha.
- Dr Sujata Mohanty Presented a paper in 3rd International conference in Biotechnology and Biological Science (Biospectrum 2019) at Kolkata from 8th to 10th August 2019.

Research project sanctioned in the dept.

S.No	Title of the project	Name of the PI/Co-PI	Funding Agency	Amount mobilized
1	Rapid development of NGS based SNP markers and marker-assisted selection towards purple blotch resistance in Onion (<i>Allium cepa</i> L.)	Dr. Raj Kumar Joshi	SERB, Govt. of India	46.32 Lakhs
2	Delineating the small RNA networks associated with host resistance and pathogenesis of basal rot fungus ' <i>Fusariumoxysporum f. sp. cepae</i> ' in	Dr. Raj Kumar Joshi	DBT, Govt. of India	47.29 Lakhs

	<i>Allium cepa L.</i>			
3	Gedunin-ZnO nanoparticle-incorporated Poly-L-Lactic acid electrospun nanofibrous scaffold for controlled drug delivery using a three-dimensional hepatosphere model	Dr Dillip Kumar Bishi	DST, Govt. of India	30.00 Lakhs

List of publications from the Department (with RDWU affiliation)

- Mishra R, Mohapatra R, **Joshi RK** (2020) Analysis of microRNAs and their targets from onion (*Allium cepa L.*) using genome survey sequences and expressed sequenced tags. **Bioinformatics**. 15(12): 907-917
- Mishra R, **Joshi RK**, Zhao K (2019) Base editing in crops: current advances, limitations and future implications. **Plant Biotechnology Journal**. Doi: 10.1111/pbi.13225.
- Mohanty JN, Chand SK, **Joshi RK** (2019) Multiple microRNAs regulate the floral development and sex differentiation in the dioecious cucurbit *Coccinia grandis (L.) Voigt*. **Plant Molecular Biology Reporter**. Doi: 10.1007/s11105-019-01143-8.
- Mishra R, Rout E, Mohanty JN, **Joshi RK** (2019) Sequence-tagged site based diagnostic markers linked to a novel anthracnose resistance gene RCt1 in chilli pepper (*Capsicum Annuum L.*) **3 Biotech**. 9, 9.
- Mahapatra M, Mahanty B, **Joshi RK** (2019) Genome wide identification and functional assignments of C₂H₂-Zinc finger family transcription factors in *Dichantheium oligosanthes*. **Bioinformatics**. 15(9): 689-696.
- Mishra R, **Joshi RK**, Zhao K (2018) Genome editing in rice: Recent advances, challenges and future implications. **Frontiers in Plant Science**.
- Chand SK, Nanda S, **Joshi RK** (2018) Genetics and molecular mapping of a novel purple blotch resistance gene *ApRI* in onion (*Allium cepa L.*) using STS and SSR markers. **Molecular Breeding**. Doi: 10.1007/s11032-018-0864-4.
- Nanda S, Mohanty JN, Mohanty B, Joshi RK (2019) Endophyte-mediated host stress tolerance as a means for crop improvement. **Reference Series in Phytochemistry**. Doi:10.1007/978-3-319-76900-4_28-1.
- Mitra T, Mohanty BP, **Mohanty S**, Purohit GK, Das BK. Expression patterns and mutation analysis of p53 in fish *Rita rita* from polluted riverine environment. **Mutat Res Gen Tox En** 832–833 (2018) 41–51.
- Mitra T, Mahanty A, Ganguly S, Purohit GK, **Mohanty S**, Parida PK, Behera PR, Raman RK, Mohanty BP. Expression patterns of heat shock protein genes in *Rita rita* from natural riverine habitat as biomarker response against environmental pollution. **Chemosphere**. 2018 Jul 23; 211:535-546.

- Mohanty, B.P, Ganguly, S., Mahanty, A., Mitra, T, **Mohanty, S.** (2020). Nutrigenomics and fish. **CAB Reviews** (Accepted)
- Mohanty BP, Mahanty A, Mitra T, **Mohanty S**, Naik AK, Parija SC (2019) Proteomic and transcriptomic changes in rat liver following oral feeding of formaldehyde. **Chemosphere**. Dec 9; 245:125599. doi: 10.1016/j [Epub ahead of print]
- Mahanty A, Purohit GK, **Mohanty S**, Mohanty BP. (2019) Heat stress induced alterations in the expression of genes associated with gonadal integrity of the teleost *Puntius sophore*. **Fish Physiology and Biochemistry** 45(4):1409-1417.
- N Nasim, I.S. Sandeep, A Sahoo, S Das, M K Panda, L Acharya, V.V. RamaRao, S Nayak, **S Mohanty** (2020) Population genetic structure and diversity analysis in economically important *Pandanus odorifer* (Forssk.) Kuntze accessions employing ISSR and SSR markers. **Industrial crop and Products**, 143:111894.
- Ray A, Halder T, Jena S, Sahoo A, Ghosh B, **Mohanty S**, Mahapatra N, Nayak S (2020) Application of artificial neural network (ANN) model for prediction and optimization of coronarin D content in *Hedychium coronarium*. **Industrial crop and Products**, (Accepted).
- R Parida, **S Mohanty**, S Nayak (2019) Population structure of *Kaempferia galanga* from eastern india **International Journal of Pharmacy and Pharmaceutical Sciences** Vol 11, Issue 3, 62-65.
- S Das, A Ray, N Nasim, S Nayak, **S Mohanty** (2019) Effect of different extraction techniques on total phenolic and flavonoid contents, and antioxidant activity of betelvine and quantification of its phenolic constituents by validated HPTLC method. **3Biotech DOI:** 10.1007/s13205-018-1565-8 (**IF – 1.7**).
- Rallapalli S, Guhathakurta S, Narayan S, **Bishi DK**, Balasubramanian V, Korrapati PS. Generation of clinical-grade red blood cells from human umbilical cord blood mononuclear cells. **Cell and Tissue Research**, 2019, 375 (2) 437–449.
- PathomthatSrisuk, **Dillip K. Bishi**, Fernanda V. Berti, Carlos J. R. Silva, Il Keun Kwon, Vitor M. Correlo, and Rui L. Reis. Eumelanin Nanoparticle-Incorporated Polyvinyl Alcohol Nanofibrous Composite as an Electroconductive Scaffold for Skeletal Muscle Tissue Engineering. **ACS Applied BioMaterials.**, 2018, 1 (6), 1893–1905.
- Kari V, **Raul SK**, Henck JM, Kitz J, Kramer F, Kosinsky RL, Übelmesser N, Mansour WY, Eggert J, Spitzner M, Najafova Z, Bastians H, Grade M, Gaedcke J, Wegwitz F, Johnsen SA. The histone methyltransferase DOT1L is required for proper DNA damage response, DNA repair, and modulates chemotherapy responsiveness. **Clin Epigenetics**. 2019 Jan 7; 11(1):4.

Books/ Book Chapters

- Bimal Prasanna Mohanty, Sudeshna Banerjee, TandrimaMitra, Soma Bhattacharjee, Arabinda Mahanty, and **Sasmita Mohanty**. Muscle proteomics of indian major carp *Catlacatla* (Hamilton). In: Advances in Fish Research. B.P. Mohanty (Ed).Vol.VII Chapter: 6, pp 103-120. ISBN: 978-93-87590-48-9

- Bimal Prasanna Mohanty, **Sasmita Mohanty**, Tandrima Mitra, Arabinda Mahanty, Satabdi Ganguly, Sivadhar Singh. 2019. Omics Technology In Fisheries And Aquaculture. In: Advances in Fish Research, Vol.-VII, Edited by B.P. Mohanty, Ch-1, PP. 1–30, Narendra Publishing House, Delhi, India.
- Bimal Prasanna Mohanty, Soma Bhattacharjee, TandrimaMitra, ArabindaMahanty, Satabdi Ganguly, and **Sasmita Mohanty**. Eye lens of catfish *Rita rita*-age-related changes in lens lipids and proteins under omics platform. In: Advances in Fish Research. B.P. Mohanty (Ed).Vol.VIIChapter: 5, pp 81-101. ISBN: 978-93-87590-48-9
- Bimal Prasanna Mohanty, Arabinda Mahanty, Tandrima Mitra, Subash Chandra Parija, **Sasmita Mohanty**. 2018. Heat Shock Proteins in Stress in Teleosts. In: Regulation of Heat Shock Protein Responses. Heat Shock Proteins, vol 13. Asea A., Kaur P. (eds) Chapter 4 PP. 71-94 Springer International Publishing AG https://doi.org/10.1007/978-3-319-74715-6_4
- Nanda S, Mohanty B, **Joshi R K** (2018) Endophyte-mediated host stress tolerance as a means for crop improvement. Inm Endophytes and Secondary metabolism-Reference series in phytochemistry, edJha S. Springer International Publishing. pP 1-25.
- Mishra R, Mohanty JN, Verma DK, **Joshi RK** (2018) Molecular markers and marker assisted selection (MAS) towards yield and quality improvement in rice. In, Recent advances and innovation in Rice Research, (eds) Verma DK, Srivastava PP, Balechand NAH. Apple Academic Press, Inc. New York.
- Mishra R, Nanda S, **Joshi RK** (2018) The CRISPER/Cas Genome editing system and its application in rice improvement. In, Recent advances and innovation in Rice Research, (eds) Verma DK, Srivastava PP, Balechand NAH. Apple Academic Press, Inc. New York.

MoU with nearby institutions

Department of Biotechnology, RDWU, signed MoUs with CIFA, Bhubaneswar and ILS, Bhubaneswar in 2018. The understanding is regarding research collaboration among the faculty and the scientists and availing the facility of the above institutes by the students.